



Culinary Institute  
of America

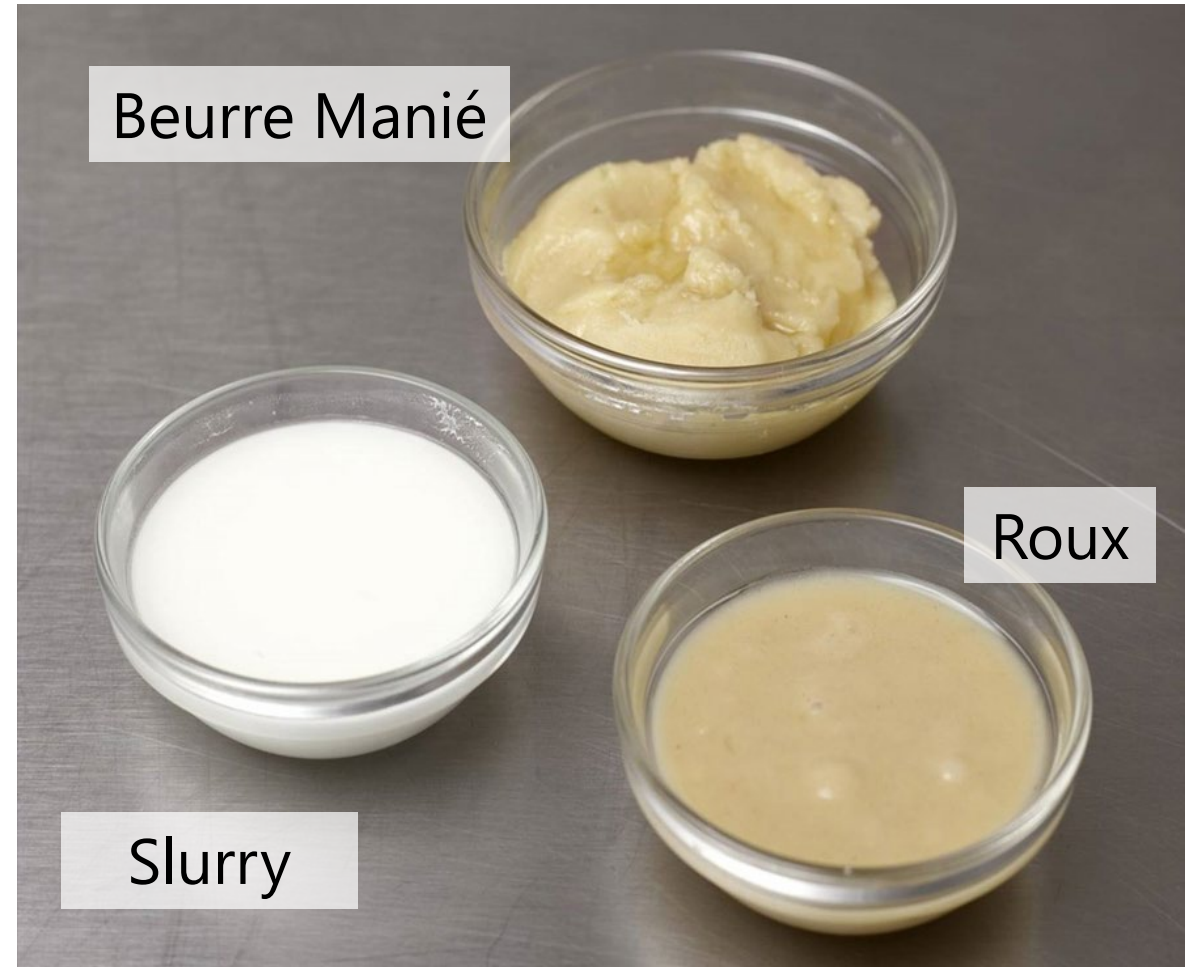
# US Navy Culinary Training

Day 2: Sauces, Batch Cooking,  
Product Substitutions



# Thickening Agents

- Beurre Manié
- Pure starches (cornstarch, arrowroot)
- Liaisons
- Grains
- Vegetables



# Slurry Facts



- Pure starch = Cold liquids
- “Heavy cream” consistency
- Twice the thickening power of flour
- Added to boiling liquid at end of cooking
- Clarity, gel strength, and thickening abilities vary with starch type

# Thickening Agents: Roux

- A roux ("roo") is cooked fat + flour
- Base for sauces and soups that works as a thickening agent when heated
- Added at beginning of cooking.
- Develops a darker color, deeper flavor as it cooks
- More flavorful and smoother than a slurry
- 4 oz. roux thickens 1 qt. liquid (medium consistency)



# Roux to Liquid Thickening Guide

## White & Pale (Blond)

Per gallon of liquid, combine with:

- **Light consistency:**  
12-14 wt. oz.
- **Medium consistency:**  
16 wt. oz.
- **Heavy Consistency:**  
18 wt. oz.



## Brown

Per gallon of liquid, combine with:

- **Light consistency:**  
16 wt. oz.
- **Medium consistency:** 18 wt. oz.
- **Heavy consistency:** 20 wt. oz.

# Combining Roux with Liquid



- Add **room temperature roux** into **hot liquid**, stirring vigorously.
- Add **cold liquid** into **hot roux**, stirring vigorously.
- Hot roux + hot liquid = lumps
- Cold roux + cold liquid = lumps

# What is a Sauce?

A flavorful liquid served as an accompaniment to food.



# Grand/ Mother Sauces

- Old style of sauce making
- Made in large batches and stored
- Roux thickened
- Laborious, time consuming
- Not eaten "as is"
- Can create many "derivative" or "small sauces"
  - Sauces created from "mothers" to fit a specific dish
  - Created in small batches



# Contemporary Sauces

- Not all based on grand sauces
- Types:
  - Emulsion sauces
  - Pan sauces
  - Broth-style sauces
  - Fruit/Vegetable based sauces



# Contemporary Sauces



- Quick to produce, require less labor
- Require less skill
- Nutritionally more sound
- Made in smaller batches
- Culturally diverse
- Often big bold flavors
- Regional and seasonal ingredients
- Not likely to contain roux
- Thickened by reduction, emulsion, purée, or pure starch

# Grand Sauces

- Sauce **B**echamel
- Sauce **E**spagnole
- Sauce **T**omato
- Sauce **H**ollandaise
- Sauce **V**eloute



# Sauce Bechamel



- Milk/cream flavored with aromatics and thickened with white roux
- Also referred to as “white sauce”
- Base for many dishes
  - White Pizza
  - Sauce for lasagna
  - Sauce for Moussaka
  - Base for Mac and Cheese (Mornay sauce)

# Sauce Espagnole

- Espagnole is a brown veal stock with additional roasted mirepoix, tomato pincage, and aromatics thickened with brown roux.
- Espagnole is a base sauce for stews and braised dishes.



# Sauce Veloute



- Grand sauce prepared by flavoring white stock with aromatics and thickening it with pale roux.
- Classically considered a white sauce.
- The amount of roux determines the thickness.
- The application dictates the desired thickness.

# What is an emulsion?

- Emulsion – A colloidal suspension usually made from two liquids that don't mix with each other.
  - Example: Oil and Water
- Types of emulsions:
  - Temporary – oil & vinegar dressing
  - Semi-permanent – Mustard vinaigrette
  - Permanent – mayonnaise or hollandaise



# Sauce Hollandaise



- An emulsion sauce made with egg yolks, melted or clarified butter and an acidic base (vinegar).
- This is a warm emulsion; mayonnaise is a cold emulsion.
- Shelf life of two hours.
- Considered a permanent emulsion – but can break from improper handling.

# Sauce Tomato

- A generic term describing a sauce based mainly upon tomatoes.
- Varies from fresh and simple to complex.
- Can be made several ways; raw or cooked from several minutes to several hours.
- Can be varying in texture from smooth to chunky.



# Cooking Techniques found in a Banquet Kitchen

- Cost effective
- Foods that hold well
- Cooking Techniques:
  - Braise
  - Roasts
  - Grill
  - Sauté
  - Stew
  - Baked



# Equipment for Batch Cooking

Steam Jacketed Kettles and Tilt Skillets



Combi Ovens



# Sauté

- Naturally tender items
- Small amounts of fat/ oil
- High smoke point for fat/ oil
- Rapid cooking techniques
- Items jumped around cooking vessel



# Sauté Equipment

- Sauteuse
- Sautoir
- Wok

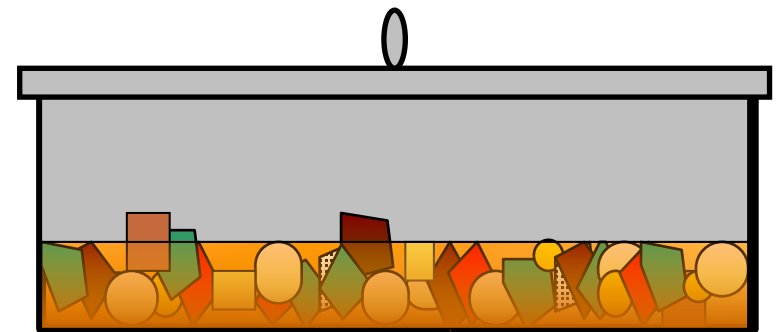
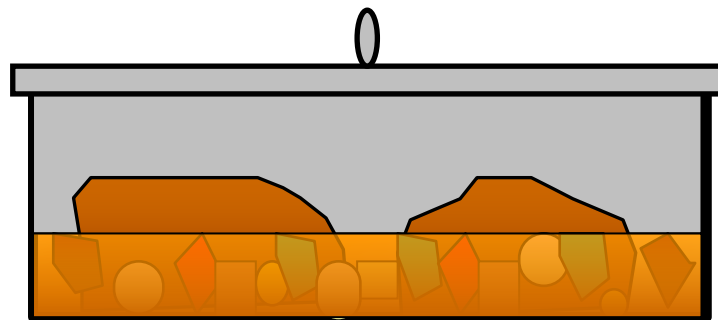


# Stir-frying

- Asian cooking method
- Similar to sauté
- Constant movement
- Bite-size pieces or smaller
- Sauce not formed from cooking juices



	Braising	Stewing
<b>Size</b>	Large, multi-portion	Small, uniform, bite size pieces
<b>Liquid</b>	Covers $\frac{1}{3}$ to $\frac{1}{2}$ item or 3 to 4 oz. per portion	Fully covers item
<b>Garnish</b>	Cooked separately	Cooked with item or separately
<b>Sauce</b>	Strained, roux thickened	Not strained, roux thickened
<b>Cooked</b>	In oven (covered)	In oven (covered) or on range (uncovered)
<b>Cooking Time</b>	Longer	Shorter



# Stir-fry and Braising Equipment



- Tilting skillet
- Steam-jacketed kettle



# Product Substitutions

- Produce comes in various forms of product that can be substituted based on availability
  - Fresh vs. frozen/canned
  - Freeze-dried or dehydrated alternates
- Fresh vs Frozen vs canned/freeze-dried meats:
  - Very little difference but can affect cooking time, even when thawed
  - Canned/freeze-dried are challenging in many ways



# Product Substitutions



- Important considerations:
  - Cooking times
  - Holding Times
  - Liquid amounts
  - Nutritional considerations



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Any Questions?